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ORIGINAL ARTICLE

The Effect of Seasonal Variation on the Chemical and Microbial Quality of Raw Milk Samples Used in Qazvin, Iran

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KEYWORDS

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ABSTRACT: Although milk and dairy products are considered as nutritious food for human, it serves as a beneficent medium for the growth of many microorganisms such as psychrotrophic microorganisms (PMs). PMs can be affected by the milk quality and dairy products by production thermostable enzymes. The present study aimed to evaluated the psychrotrophic microorganisms count (PMsC) of raw cow milk samples in milk collection centers. A total of 60 raw cow milk samples were collected from 15 main milk collection centers located in Qazvin, Iran for a period of one year (four seasons). The mean±SD of PMs, Ph, and acidity levels for a period of one year was 4.83±0.43 Log_{10} CFU/ml, 6.30±0.41, and 20.13±3.21°D, respectively. PMsC, Ph, and acidity levels in cold seasons (autumn and winter) were greater than warm seasons (spring and summer). It may be expected that PMs values can affect the pH and acidity levels while no significant relationship (P>0.05) was found among PMs, Ph, and acidity levels. Seasonal variations had a significant effect (P<0.05) on PMs values while seasonal variations had no significant effect (P>0.05) on the pH and acidity levels. 55% (33 out of 60) of milk samples were in the accepted limit. Milk quality properties in Qazvin in terms of PMs were relatively within the hygienic standards limit.

INTRODUCTION

Milk and dairy products represent a major source of protein, calcium, phosphorus and fat-soluble vitamins (vehicle for vitamins A and D) and may make a significant contribution to the dietary intakes of other minority such as vitamin C and minerals (magnesium and iodine) [1]. A growing number of customers consume raw milk. The reasons for this decision include enhanced nutritional qualities, taste, and health benefits in raw milk compared to thermal treatment milk (pasteurized or UHT) while many epidemiological studies have clearly stated that raw milk can be contaminated by a variety of pathogens being associated with human diseases [2]. Raw cow milk has favorable physical and chemical media for a range of microorganisms such as a of psychrotrophic microorganisms species which are mainly the members of the genus *Pseudomonas* and other germs infecting milk during milk collection or storage [3].

Psychrotrophic microorganisms (PMs) are defined as the microorganisms with the ability to grow at low temperatures. The optimal temperature for PMs growth is at 15°C or lower, a maximal temperature for growth is at about 20°C, and it has an ability to grow at 0°C or below but for a period short time [4]. For organizational and economic reasons, it is impossible to reach milk to the dairy factories after each milking, thus milk should be stored at low temperatures in the farm bulk or milk

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